JCB
THE JOURNAL OF CELL BIOLOGY
VOL. 184, NO. 1, JANUARY 12, 2009

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- It takes two to party with chromatin
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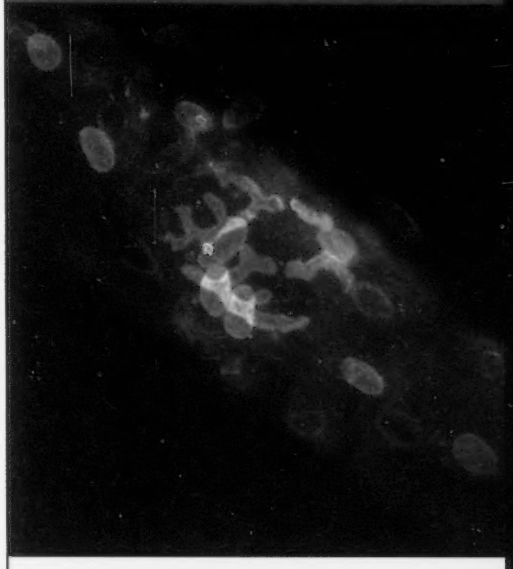

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Lamin A—a component of the nuclear lamina—correctly positions nuclei at sites within muscle fibers destined to be innervated. Without functional lamin A, neuromuscular junctions are fragmented and disorganized (green).
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101 Progenitor cell proliferation in the retina is dependent on Notch-independent Sonic hedgehog/Hes1 activity
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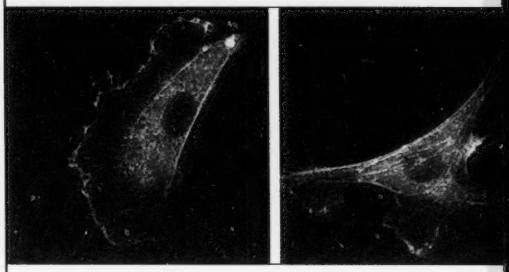

The signaling molecule BMP-2 stimulates angiogenesis by promoting the survival, proliferation, and motility of pulmonary endothelial cells. de Jesus Perez et al. show that it does this by activating two different branches of the Wnt signaling pathway.
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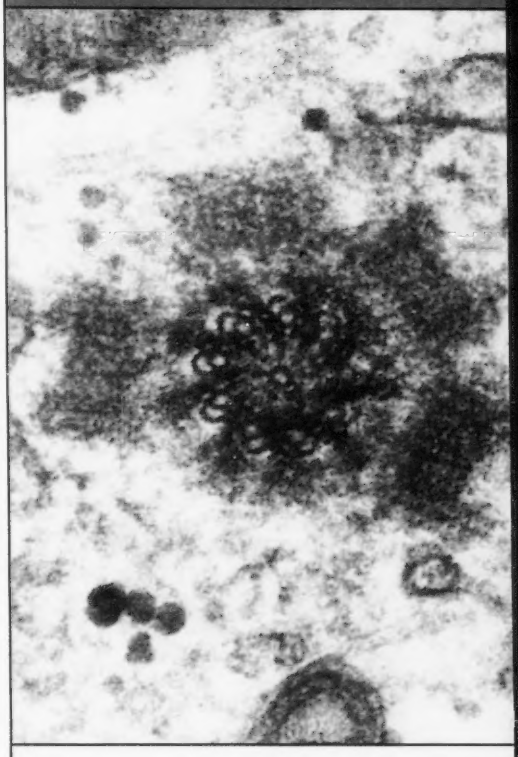

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The SCF ubiquitin ligase prevents centriole reduplication by targeting the kinase Plk4 for degradation. Expression of a non-degradable form of Plk4 allows a mother centriole (red) to assemble multiple daughters (colored blocks).
See page 225.

281 Essential and unique roles of PIP5K-γ and -α in Fcγ receptor-mediated phagocytosis
Yuntao S. Mao, Masaki Yamaga, Xiaohui Zhu, Yongjie Wei, Hui-Qiao Sun, Jing Wang, Mia Yun, Yanfeng Wang, Gilbert Di Paolo, Michael Bennett, Ira Mellman, Charles S. Abrams, Pietro De Camilli, Christopher Y. Lu, and Helen L. Yin

297 Reversible binding and rapid diffusion of proteins in complex with inositol lipids serves to coordinate free movement with spatial information
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335 Coordinated control of self-renewal and differentiation of neural stem cells by Myc and the $p19^{ARF}$–p53 pathway
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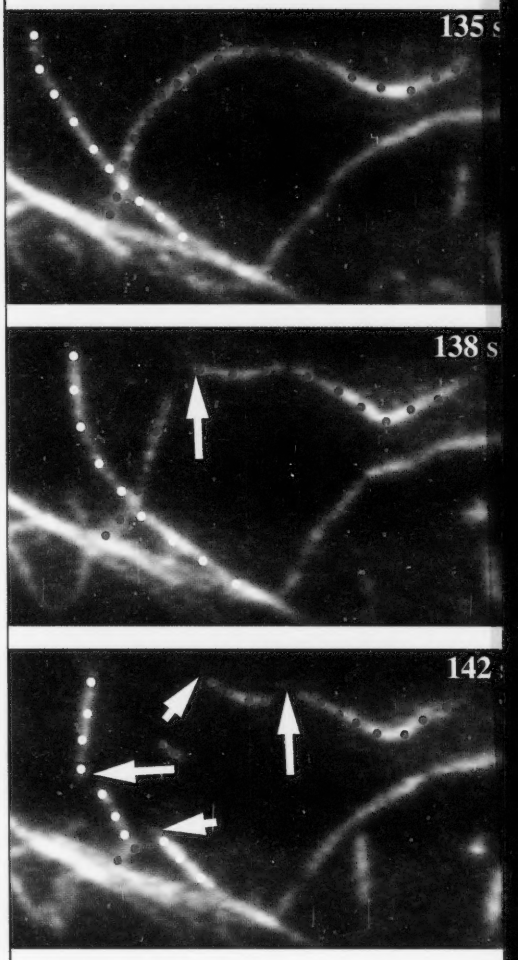

Rather than "treadmilling" like animal cell actin filaments, Staiger et al. find that plant cell actin dynamics rely on rapid polymerization followed by severing events (arrows).
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• Cell cycle keeps Fus2p in check before yeast mate
• Mitotic spindle ties the Golgi ribbon
• Fibroblasts invade at a Snail's pace
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391 The mitotic spindle mediates inheritance of the Golgi ribbon structure
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409 Antagonistic regulation of Fus2p nuclear localization by pheromone signaling and the cell cycle
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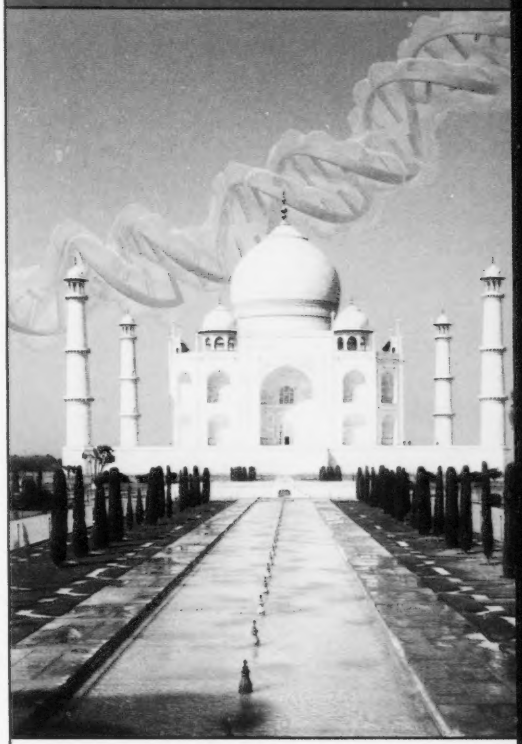

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India's research community has big plans for building its international reputation. Vale and Dell present a special feature on the past, present, and future of Indian bioscience.
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423 Dendritic LSm1/CBP80-mRNPs mark the early steps of transport commitment and translational control
Alessandra di Penta, Valentina Mercaldo, Fulvio Florenzano, Sebastian Munck, M. Teresa Ciotti, Francesca Zalfa, Delio Mercanti, Marco Molinari, Claudia Bagni, and Tilmann Achsel

437 An essential role for p120-catenin in Src- and Rac1-mediated anchorage-independent cell growth
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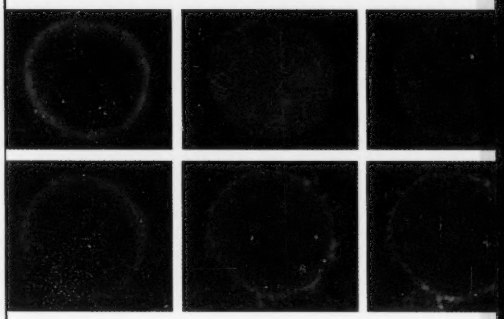
451 Phospholipase C–mediated hydrolysis of PIP2 releases ERM proteins from lymphocyte membrane
Jian-Jiang Hao, Yin Liu, Michael Kruhlak, Karen E. Debell, Barbara L. Rellahan, and Stephen Shaw



To alter their shape and infiltrate tissues, lymphocytes must inactivate ERM proteins linking the actin cytoskeleton to the cell membrane. Hao et al. show that phospholipase C (purple) releases ERM proteins (red) from the membrane by hydrolyzing the phospholipid PIP2 (green).
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Andrew D. Doyle, Francis W. Wang, Kazue Matsumoto, and Kenneth M. Yamada

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515 Sister telomeres rendered dysfunctional by persistent cohesion are fused by NHEJ
Susan J. Hsiao and Susan Smith

527 Dbf2–Mob1 drives relocalization of protein phosphatase Cdc14 to the cytoplasm during exit from mitosis
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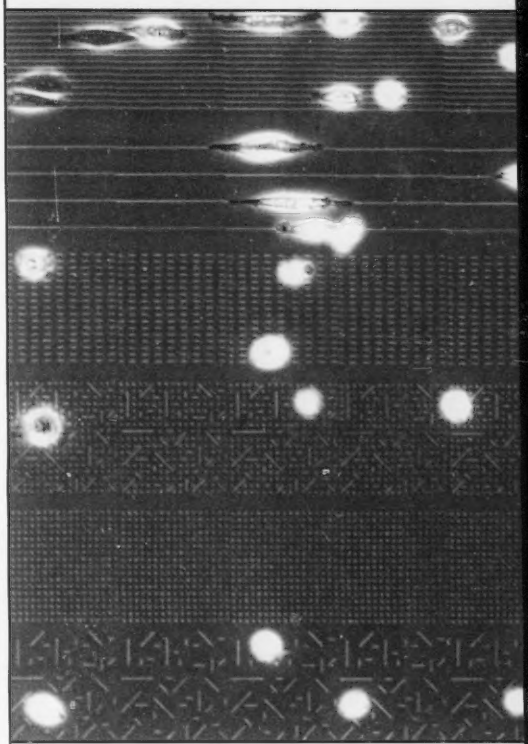

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Doyle et al. have designed a new technique for micropatterning proteins onto coverslips to determine how topography dictates migration. In doing so they found that migration along a straight line is very similar to 3D migration.

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541 Identification of cell cycle–arrested quiescent osteoclast precursors in vivo
Toshihide Mizoguchi, Akinori Muto, Nobuyuki Udagawa, Atsushi Arai, Teruhito Yamashita, Akihiro Hosoya, Tadashi Ninomiya, Hiroaki Nakamura, Yohei Yamamoto, Saya Kinugawa, Midori Nakamura, Yuko Nakamichi, Yasuhiro Kobayashi, Sakae Nagasawa, Kimimitsu Oda, Hirofumi Tanaka, Mitsuo Tagaya, Josef M. Penninger, Michio Ito, and Naoyuki Takahashi

555 Specific combinations of SR proteins associate with single pre-messenger RNAs in vivo and contribute different functions
Petra Björk, ShaoBo Jin, Jian Zhao, Om Prakash Singh, Jan-Olov Persson, Ulf Hellman, and Lars Wieslander

569 Mitochondrial outer and inner membrane fusion requires a modified carrier protein
Suzanne Hoppins, Jennifer Horner, Cheng Song, J. Michael McCaffery, and Jodi Nunnari

583 The genetic interactome of prohibitins: coordinated control of cardiolipin and phosphatidylethanolamine by conserved regulators in mitochondria
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597 A concentration-dependent endocytic trap and sink mechanism converts Bmper from an activator to an inhibitor of Bmp signaling
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611 Sequential roles for myosin-X in BMP6-dependent filopodial extension, migration, and activation of BMP receptors
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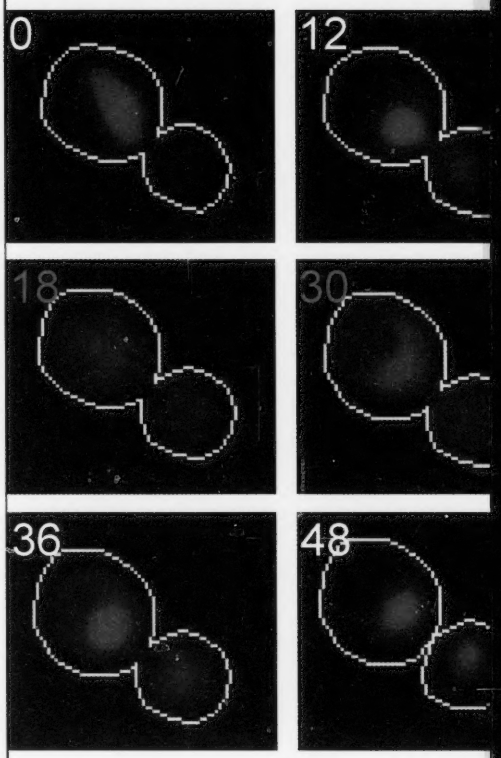
613 SMK-1/PPH-4.1–mediated silencing of the CHK-1 response to DNA damage in early *C. elegans* embryos
Seung-Hwan Kim, Antonia H. Holway, Suzanne Wolff, Andrew Dillin, and W. Matthew Michael



Mohl et al. have been investigating the MEN at work. They show how the mitotic exit network (MEN) component, Dbf2-Mob1, regulates the shuttling of a cell cycle factor (green) into (top and bottom rows) and out of (middle row) the nucleus.
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- Turn back, wayward axon

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639 Influence of cyclin type and dose on mitotic entry and progression in the early *Drosophila* embryo
Mark L. McCleland, Jeffrey A. Farrell, and Patrick H. O'Farrell

647 Spatiotemporal control of mitosis by the conserved spindle matrix protein Megator
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T. Renee Dawson, Michelle D. Lazarus, Martin W. Hetzer, and Susan R. Wente

677 Requirements for NuMA in maintenance and establishment of mammalian spindle poles
Alain D. Silk, Andrew J. Holland, and Don W. Cleveland

691 Mammalian end binding proteins control persistent microtubule growth
Yulia Komarova, Christian O. De Groot, Ilya Grigoriev, Susana Montenegro Gouveia, E. Laura Munteanu, Joseph M. Schober, Srinivas Honnappa, Rubén M. Buey, Casper C. Hoogenraad, Marileen Dogterom, Gary G. Borisy, Michel O. Steinmetz, and Anna Akhmanova

707 Bcl-x_L increases mitochondrial fission, fusion, and biomass in neurons
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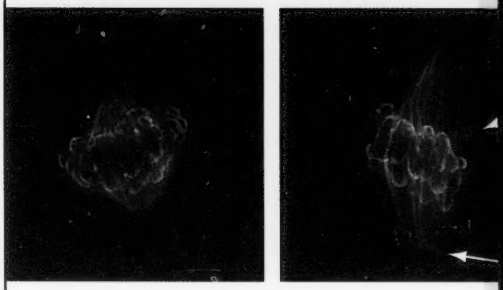
The repulsive guidance molecule RGMa helps neuronal axons to their targets by activating the small GTPase RhoA to collapse growth cones. Hata et al. identify Unc5B as a coreceptor of RGMa that activates RhoA to initiate the collapse.
See page 737.

721 A CD317/tetherin–RICH2 complex plays a critical role in the organization of the subapical actin cytoskeleton in polarized epithelial cells
Ruth Rollason, Viktor Korolchuk, Clare Hamilton, Mark Jepson, and George Banting

737 Unc5B associates with LARG to mediate the action of repulsive guidance molecule
Katsuhiko Hata, Kozo Kaibuchi, Shinobu Inagaki, and Toshihide Yamashita

751 Munc18-1 binding to the neuronal SNARE complex controls synaptic vesicle priming
Ferenc Deák, Yi Xu, Wen-Pin Chang, Irina Dulubova, Mikhail Khvotchev, Xinran Liu, Thomas C. Südhof, and Josep Rizo



Silk et al. show that mitotic spindle microtubules (green) require a protein called NuMA to keep their focus. NuMA disruption (right) causes the spindle poles to become unfocused and detached from centrosomes (arrows).
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• Lipid droplets lead a Spartin existence
• GSK3β loosens the CLASP on microtubules
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777 Wac: a new Augmin subunit required for chromosome alignment but not for acentrosomal microtubule assembly in female meiosis
Ana M. Meireles, Katherine H. Fisher, Nathalie Colombié, James G. Wakefield, and Hiroyuki Ohkura

785 Reversion-induced LIM interaction with Src reveals a novel Src inactivation cycle
Yongjun Zhang, Yizeng Tu, Jianping Zhao, Ka Chen, and Chuanyue Wu

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793 TopBP1 and DNA polymerase-α directly recruit the 9-1-1 complex to stalled DNA replication forks
Shan Yan and W. Matthew Michael

805 NF-κB and Snail1a coordinate the cell cycle with gastrulation
Xiaolin Liu, Sizhou Huang, Jun Ma, Chun Li, Yaoguang Zhang, and Lingfei Luo

817 Regulation of epithelial–mesenchymal IL-1 signaling by PPARβ/δ is essential for skin homeostasis and wound healing
Han Chung Chong, Ming Jie Tan, Virginie Philippe, Siew Hwey Tan, Chek Kun Tan, Chee Wai Ku, Yan Yih Goh, Walter Wahli, Liliane Michalik, and Nguan Soon Tan

833 Sem1 is a functional component of the nuclear pore complex–associated messenger RNA export machinery
Marius Boulos Faza, Stefan Kemmler, Sonia Jimeno, Cristina González-Aguilera, Andrés Aguilera, Ed Hurt, and Vikram Govind Panse

847 N-glycans are direct determinants of CFTR folding and stability in secretory and endocytic membrane traffic
Rina Glozman, Tsukasa Okiyoneda, Cory M. Mulvihill, James M. Rini, Herve Barriere, and Gergely L. Lukacs

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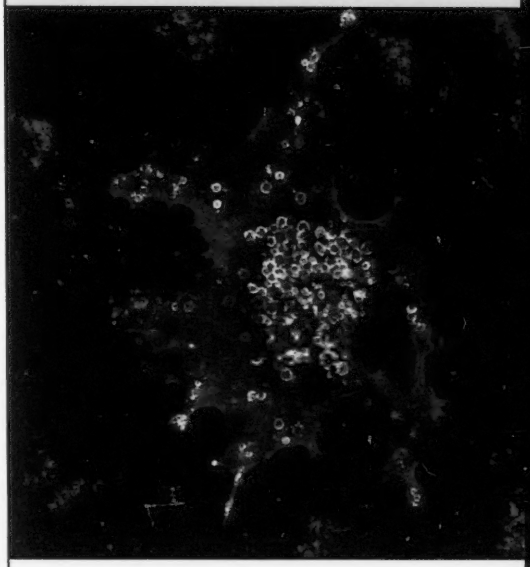

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EGF stimulates the small GTPase KRas (green) to move from the plasma membrane to late endosomes and lysosomes (red). KRas continues to signal from these compartments before being degraded.
See page 863.

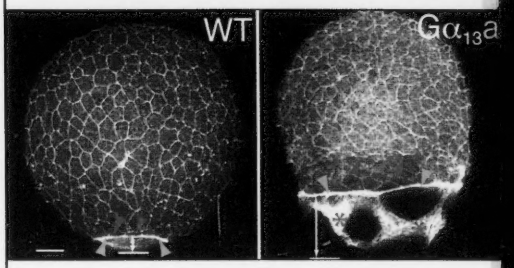
863 A clathrin-dependent pathway leads to KRas signaling on late endosomes en route to lysosomes
Albert Lu, Francesc Tebar, Blanca Alvarez-Moya, Cristina López-Alcalá, Maria Calvo, Carlos Enrich, Neus Agell, Takeshi Nakamura, Michiyuki Matsuda, and Oriol Bachs

881 A role for ubiquitin ligases and Spartin/SPG20 in lipid droplet turnover
Scott W. Eastman, Mina Yassaee, and Paul D. Bieniasz

895 GSK3β phosphorylation modulates CLASP–microtubule association and lamella microtubule attachment
Praveen Kumar, Karen S. Lyle, Sarah Gierke, Alexandre Matov, Gaudenz Danuser, and Torsten Wittmann

909 $G\alpha_{12/13}$ regulate epiboly by inhibiting E-cadherin activity and modulating the actin cytoskeleton
Fang Lin, Songhai Chen, Diane S. Sepich, Jennifer Ray Panizzi, Sherry G. Clendenon, James A. Marrs, Heidi E. Hamm, and Lilianna Solnica-Krezel

923 Akt regulates L-type Ca^{2+} channel activity by modulating $Ca_v\alpha 1$ protein stability
Daniele Catalucci, Deng-Hong Zhang, Jaime DeSantiago, Franck Aimond, Guillaume Barbara, Jean Chemin, Désiré Bonci, Eckard Picht, Francesca Rusconi, Nancy D. Dalton, Kirk L. Peterson, Sylvain Richard, Donald M. Bers, Joan Heller Brown, and Gianluigi Condorelli



Epiboly is a developmental movement in which outer cell layers expand and envelop the embryonic yolk cell. Lin et al. show that the heterotrimeric G proteins $G\alpha_{12/13}$ regulate epiboly in zebrafish embryos by inhibiting cell-cell adhesion and organizing the actin cytoskeleton.
See page 909.